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PEOPLE'S REPUBLIC OF CHINA SCIENTIFIC ABSTRACTS

No. 196

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JOURNAL OF BOTANY

AUTHORS: HSIA Ch'un-hua [1115 2504 5478]
SHU Chi-lin [2631 7139 2651]

ORG: Institute of Tea Leaves, Chinese Academy of Agricultural Science

TITLE: "I-hsi-li Can Induce Deciduous Flower and Buds from Tea Trees"

SOURCE: Peking CHIH-WU TSA-CHIH [JOURNAL OF BOTANY] in Chinese No 1,
Feb 78 p 10

ABSTRACT: I-hsi-li, an ethylene gas compound, was successfully applied to drop excessive blossoms and buds from tea trees to promote healthier growth of tea trees, and higher yield of tea leaves. The optimal conditions were found to be 800 - 1,000 ppm concentrations, and spraying during October to November. The rate of dropping can be as high as 80-90%.

AUTHOR: None

ORG: Environmental Protection Research Group, Kwangtung Provincial
Institute of Botany

TITLE: "Atmospheric Pollution-Resistant Plant of Kwangtung Province"

SOURCE: Peking CHIH-WU TSA-CHIH [JOURNAL OF BOTANY] in Chinese No 1,
Feb 78 pp 14-16

ABSTRACT: A study on a series of common green-belt trees, fruit trees, crops, garden flowers and wild herbs that are either resistant or sensitive to atmospheric sulfur dioxide, sulfur trioxide, hydrogen sulfide, hydrogen fluoride, chlorine, acid mists, oxides of nitrogen and dust, besides air cleansing capacity, tends to suggest in general that evergreen broad-leaved trees have stronger resistance than blattwerfender trees, and that conifers have weaker resistance than broad-leaved trees.

AUTHOR: None

ORG: This Journal

TITLE: "A Review of Botanical Research in China"

SOURCE: Peking CHIH-WU TSA-CHIH [JOURNAL OF BOTANY] in Chinese No 2,
Apr 78 pp 1-4

ABSTRACT: Commemorating the successful convening of the All-China Science Conference, this article reviews some triumphal achievements of botanical research in China that includes: 1) collection of more than 30,000 botanical specimens, and establishment of the characteristics of alpino-arctic vegetation types and their laws of distribution following four consecutive years of comprehensive scientific expedition over the Tsinghai-Tibet Plateau since 1973; 2) research on photosynthesis that covers the mechanism of phosphorylation, the function of chlorophyll, artificial simulation of photosynthesis, and their application to industry and agriculture; 3) development of a new theory that interprets respiration in metabolism as a process of supplying energy and materials

[continuation of CHIH-WU TSA-CHIH No 2, Apr 78 pp 1-4]

in life activities; 4) research on biological nitrogen fixation with regard to obtainment of molybdena-iron protein crystals, models of the active center of immobilized nitrogenase, and theoretical calculation of the nitrogen atom bonds of simulated immobilized nitrogenase; and 5) breeding of new strains of tobacco, wheat, corn and other crops by the anther and haploid techniques, development of high potent N_6 and potato medium, and their correlated systematic cytological research.

AUTHOR: CHUNG Yung-an [6945 3057 1344]

ORG: Inner Mongolia Autonomous Region Institute of Prairies

TITLE: "Iron-Deficiency in Prairie Plants"

SOURCE: Peking CHIH-WU TSA-CHIH [JOURNAL OF BOTANY] in Chinese No 2,
Apr 78 pp 5-7

ABSTRACT: The author introduces the knowledge of why prairie soil can be deficient in available iron, the symptoms of iron-deficient plants in various degrees, the use of black beans and dryland willows as iron-deficient indicator plants, how to diagnose the degree of iron-deficiency by their leaves, and the methods of controlling the disease. The methods introduced include overturning of hydrochloride salt deposit layer of the soil, transfusion or spraying of ferrous sulfate solution, direct burying of solid ferrous sulfate, breeding of iron-deficiency-resistant varieties, and application of farmyard manure.

AUTHOR: None

ORG: Soil and Fertilizer Research Group, Huang-kang Branch of Central China Agricultural College

TITLE: "The Cause of Blossomless Cotton Buds"

SOURCE: Peking CHIH-WU TSA-CHIH [JOURNAL OF BOTANY] in Chinese No 2,
Apr 78 pp 10-11

ABSTRACT: Based on an occurrence in Hupeh Hsin-chou district where cotton production was seriously affected by the inability of cotton buds to blossom and forming bolls due to deficiency of boron in the soil, this article introduces the knowledge concerned with the symptoms of boron deficiency in the various parts of the cotton plant, the importance of boron in the healthy growth, blossoming and boll-forming in cotton breeding, and how to control the disease by application of boron fertilizer, application of organic manure or pearl ash, and covering the soil with a layer of foreign soil.

AUTHOR: CHENG Kuang-hua [6774 0342 5478]

ORG: Botanical Garden, Institute of Botany, Chinese Academy of Sciences

TITLE: "Fast Determination of Germination Capability of Seeds"

SOURCE: Peking CHIH-WU TSA-CHIH [JOURNAL OF BOTANY] in Chinese No 2,
Apr 78 pp 18-19, 13

ABSTRACT: This article introduces the principles and techniques of four methods for the fast determination of the germination capability and viability of seeds, namely: 1) the seed cutting method; 2) the chlorotribenzyl tetrazolinum dyeing method on the basis of enzyme activity; 3) the ultraviolet fluorescent method on the basis of the change of chemical composition of seeds; and 4) the filter paper fluorescent group method on the basis of permeability of cell membranes.

11,206

CSO: 4009

GENETICS AND BREEDING

AUTHOR: None

ORG: Institute of Rice, Liaoning Academy of Agricultural Science

TITLE: "Triumph Over The Three Lines of Round-grained Rice"

SOURCE: Peking I-CH'UAN YU YU-CHUNG [GENETICS AND BREEDING] in Chinese
No 2, Mar 78 pp 1-2

ABSTRACT: Following the successful breeding of the pair of sterile line and retention line of round-grained rice in 1974, the difficulty of finding the restorative line from round grained rice was finally solved by bridging the abundant restorative genes as well as the high yielding and short stalk characteristics of long-grained rice into a newly hybridized restorative line of round-grained rice. The successful breeding of many such "bridged" restorative line hybrids in Hainan Island, Shen-yang, Ying-k'ou and Changsha has rendered the breeding of a selection of high-yielding and superior quality round-grained rice hybrids for massive promotion and cultivation.

AUTHOR: None

ORG: Water Paddy Heterosis Research Group, Hunan Agricultural College

TITLE: "Further Report on Nan-hsin Sterile Line Research"

SOURCE: Peking I-CH'UAN YU YU-CHUNG [GENETICS AND BREEDING] in Chinese
No 2, Mar 78 pp 3-4

ABSTRACT: In an attempt to clarify the controversy over the genetic mechanism of Nan-hsin male sterile line, and the prospect of its being utilized, this article reports a series of experiments that all confirm the difficulty of its being directly utilized due to its difference with the sterile line of long-grained and round grained rice hybrid, and the C line of the three lines selective breeding system. It is hoped that the problem of its being directly utilized can be solved by further research on artificial breeding of restorative line, retention and utilization of pollenless type, and breeding of a new group of sterile lines.

AUTHORS: TU Shih-ts'an [2629 0013 3605]
CHOU Chia-hua [0719 1367 5478]
YANG Ling-kuei [2799 0109 6311]

ORG: Institute of Crops, Szechwan Academy of Agricultural Science

TITLE: "Dwarf Ch'eng-ai No 1 Corn"

SOURCE: Peking I-CH'UAN YU YU-CHUNG [GENETICS AND BREEDING] in Chinese
No 2, Mar 78 pp 7, 11

ABSTRACT: Ch'eng-ai No 1, a dwarf corn variety hybridized from No 316 and No 2001 corn strains, is noted for its strong 142-173 cm high stalk, early ripening, higher yield, good corn quality, and resistant to fertilizer and lodging. It is specially adaptable to intercropping with sweet potato, beans and cotton throughout Szechwan Province to replace the former variety of taller stalks with less grain yield. The optimal density of the cultivation is found to 5,000 trees per mou, where the yield can be as high as 1,133.33 kan per mou. In view of its early ripening characteristics, planting should be as early as possible with sufficient water and fertilizer.

AUTHORS: MAO Yen-lin [3029 3508 7792]
TS'AI T'i-shu [5591 7555 2885]
LI Chun-ming [2621 3182 2494]
CHANG Ch'ung-li [1728 1504 4409]

ORG: All Biophysics Majors, Northern China Agricultural University

TITLE: "Longer Awn and Larger Grain Mutated Barley"

SOURCE: Peking I-CH'UAN YU YU-CHUNG [GENETICS AND BREEDING] in Chinese
No 2, Mar 78 pp 8-9

ABSTRACT: A mutant barley noted for their 111.8% longer awn and 32.4% larger grain was reported to have been bred from weather-dried barley seeds (*Hordeum vulgare* L.) irradiated with Co^{60} X-rays. A study on the hereditary characteristics of the mutant genes confirms the dominant relationship between the gene number and mutant genes of the mutant barley and the allele of the primary barley, the existence of an intermediate mutant, the semi-dominant single gene mutation of the mutant, and the general existence of pleiotropy in the mutant genes. Its applicability to agriculture and direction of future research are discussed. The irradiation of barley seeds was conducted by the Institute of Atomic Energy Utilization of the Chinese Academy of Agricultural and Forestral Sciences.

AUTHORS: JUNG Shan [1369 3790]
CH'EN Shu-yang [7115 3359 7122]

ORG: Both of Northwestern Institute of Botany

TITLE: "Some Methods to Cope With Antipathy in Outbred Hybridization"

SOURCE: Peking I-CH'UAN YU YU-CHUNG [GENETICS AND BREEDING] in Chinese
No 2, Mar 78 pp 10-11

ABSTRACT: Nine methods are introduced to cope with the antipathy in outbred hybridization, namely: 1) regulating the florescence of the parents, and overcoming the missing of florescence; 2) conducting extensive test crossing, and selecting suitable parents; 3) conducting normal and reverse crossing to ascertain suitable mothers; 4) selecting repetitive pollination and other pollination methods; 5) physical and chemical treatment; 6) adopting bridge plant crossing; 7) changing the doubling of parental chromosomes; 8) adopting ovary pollination, isolated pollination and test tube fertilization; and 9) isolated culturing of young embryos.

AUTHOR: None

ORG: Plant Physiology Laboratory, Yunnan Institute of Botany

TITLE: "Influence of Giberellin on the Differentiation of Wheat Pollen Callous"

SOURCE: Peking I-CH'UAN YU YU-CHUNG [GENETICS AND BREEDING] in Chinese
No 2, Mar 78 p 13

ABSTRACT: This article reports that addition of 0.5 mg/l of giberellin to isolated differentiation culture of wheat pollen can accelerate the rate of differentiation to more than 80%, when young sprouts of callous will appear after about 6 days, and the peak of differentiation will occur after about 20 days. However, as soon as sprouts and roots of the small plant have grown, the seedling must be transferred to a cultural medium without giberellin in time for normal growth.

AUTHOR: None

ORG: Department of Biology, Lanchow University

TITLE: "Experiments on Haploid Wheat Chromosome Doubling"

SOURCE: Peking I-CH'UAN YU YU-CHUNG [GENETICS AND BREEDING] in Chinese
No 2, Mar 78 pp 14-15

ABSTRACT: Soaking of the haploid wheat root system in 0.05% colchicine and 0.05% colchicine solution with 1.5% dimethyl sulfoxide in four alternate days shows that the rate of chromosome doubling is 57.9% for the former and 75.0% for the later, or an average of 60.5%, while that of those treated with tiller threading is 41.7%, which are all definitely better than the barely 20% of the old technique. The grain-forming rate of those so-treated are all found to be higher. The importance of careful control of such cultural conditions as temperature and relative humidity, as well as the cultural mangement are finally stressed.

AUTHOR: None

ORG: Kiangsi Nan-ch'eng County Institute of Agricultural Science

TITLE: "Experiments on Elimination of Pollution in Water Paddy Flower Culture"

SOURCE: Peking I-CH'UAN YU YU-CHUNG [GENETICS AND BREEDING] in Chinese
No 2, Mar 78 p 15

ABSTRACT: A comparison of the bacteriostasis of some organic bactericides and ultraviolet rays against the bacteria and fungus pollution that seriously affects the callous, green buds and green seedling in water paddy flower culture shows that soaking with 0.1-0.2% mercuric chloride is most effective against the pollution, where all fungus can be completely destroyed, the callous will bud after 7 days, and new roots will start to grow from green budding points after 10 days.

AUTHOR: YU Tan-nien [0151 6130 1628]

ORG: Department of Biology, Inner Mongolia Normal College

TITLE: "Heredity of Tomato Male-sterile Character"

SOURCE: Peking I-CH'UAN YU YU-CHUNG [GENETICS AND BREEDING] in Chinese
No 2, Mar 78 pp 18-19, 27

ABSTRACT: In an effort to improve the character of tomato sterile line, the author reports a study on the hereditary characters of the long style type, the functional sterile type and the staminal degeneration type, as well as their labelled characters in terms of the leaves and stems in the selective breeding of tomato male sterile lines. Following a comparison on the advantages and disadvantages of the practical values of their respective sterile characters, it is suggested that long style functional sterility breeding should be preferred on the basis of its simpler breeding process and higher efficiency, provided appropriate labelling technique is adopted.

AUTHOR: WANG Ta-yuan [3769 1129 0337]

ORG: Institute of Oranges, Chinese Academy of Agricultural Sciences

TITLE: "Chimera and Mutant Breeding of Oranges"

SOURCE: Peking I-CH'UAN YU YU-CHUNG [GENETICS AND BREEDING] in Chinese
No 2, Mar 78 pp 23-24

ABSTRACT: The author introduces the general knowledge concerned with chimera that originated from the mutant breeding of oranges induced by such physical means as α -radiation, x-radiation, and laser, and such chemical means as colchicine, EMS, etc., how they cause "hereditary instability", and how they can be eliminated by cytological mutation treatment during the simple cell stage, or utilizing the simple cell culture technique to isolate the formed chimera.

AUTHOR: None

ORG: Hopeh Chang-chia-k'ou District Pa-hsia Institute of Agricultural Sciences

TITLE: "New Techniques of Male Corn Sterilization"

SOURCE: Peking I-CH'UAN YU YU-CHUNG [GENETICS AND BREEDING] in Chinese No 2, Mar 78 p 25

ABSTRACT: The procedure of the new simpler male sterilizing technique of corn includes: 1) sorting the ears of corn; 2) soaking the ears in water; 3) thrushing off the anthers; 4) tapping off the remaining anthers with finger tips; 5) collecting the pollen in bags; and 6) conducting pollination in bags. The time of artificial crossing and supported pollination should be coordinated with habitual florescence of the corn.

AUTHORS: TAO Liang-tso [6670 5328 0146]
KUO Hao-wen [6753 1170 0795]

ORG: TAO of Sinkiang Academy of Agricultural Science Institute of Animal Husbandry and Veterinary Medicine, and KUO of Urumchi Nan-shan Sheep Sire Farm

TITLE: "Application of Quantitative Heredity in Sinkiang Wool Sheep Breeding"

SOURCE: Peking I-CH'UAN YU YU-CHUNG [GENETICS AND BREEDING] in Chinese No 2, Mar 78 pp 28-30

ABSTRACT: Statistics of hereditary power of different sheep sire characters and the relationship between the various characters and appearance are adopted by the Sinkiang Urumchi Nan-shan Sheep Sire Farm to devise a new system of sheep breeding innovations that has increased the unit yield of wool by 28%, the yield of one year old wool by 17%, and the ratio of extra and first grade wool by more than 80%. The new innovated systems include: 1) a ram selection and utilization system; 2) a group ewe identification system; 3) a group circulation and renewal system; and 4) an individual selective pairing system.

AUTHOR: SHEN Ch'ang-chiang [3088 7022 3068]

ORG: Combined Natural Resources Expeditory Group, Chinese Academy of Sciences

TITLE: "General Sheep Improvement in Various Ecological Regions of China"

SOURCE: Peking I-CH'UAN YU YU-CHUNG [GENETICS AND BREEDING] in Chinese No 2, Mar 78 pp 31-32

ABSTRACT: The author reviews the general improvement of sheep husbandry in the various ecological regions of China since the liberation with regard to introduction of new fine and semi-fine wool pure sheep sires, improvement of crossing technique, and promotion of new artificial fertilization technique, by which more than a quarter of all the sheep in China have now improved in both quality and quantity. The ecological regions reviewed include; 1) the northeastern forest-prairie region; 2) the northern arid prairie region; 3) the western desert region; and 4) the Tsinghai-Tibet plateau region.

AUTHOR: None

ORG: Poultry Laboratory, Institute of Animal Husbandry and Veterinary Medicine, Peking Academy of Agricultural Sciences

TITLE: "A Method of Identifying the Sexes of New-born Chicks"

SOURCE: Peking I-CH'UAN YU YU-CHUNG [GENETICS AND BREEDING] in Chinese No 2, Mar 78 p 35

ABSTRACT: Based on the partial inheritance principle of chromosome ZZ for rooster and ZW for hen, and the correspondence of a pair of K and k alleles to the length of feathers of new-born chicks, where K represents slow feather growth and k represents fast feather growth, the article reports the development of a system whereby the sex of new-born chicks can be determined by the rate of wing feather growth, when the effect of some other alleles over the chromosomes is also taken into consideration. The accuracy of the method is claimed to be 100%.

11,206
CSO: 4009

AUTHOR: LI Ting-min [2621 0002 3046]
WAN Pang-hui [5502 6721 1920]

ORG: Both of Kwangsi Agricultural Sciences College

TITLE: "A Discussion of the Principal Direction of Attack in Triple Strain Breeding of Rice"

SOURCE: Peking I-CH'UAN YU YU-CHUNG [GENETICS AND BREEDING] in Chinese
No 3, May 78 p. 4 and bottom of p. 5

ABSTRACT: Article deals with problems in the development of hybrid strains of rice. The prime concerns in this field are the development of early-maturing, highly productive, resistant and superior strains. The authors indicate that first priority should be given to developing highly productive strains and that second priority should be given to developing resistant strains. Strains resistant to various rice plant diseases and insect pests are listed. Authors believe that special efforts should be directed at developing the potential of hybrid strains of non-glutinous rice.

AUTHOR: LI Cheng-yu [2621 6927 0645]

ORG: Yunnan Agricultural University

TITLE: "An Inquiry into the Theory of the Superiority of Hybrid Rice from an Analysis of Contradictions"

SOURCE: Peking I-CH'UAN YU YU-CHUNG [GENETICS AND BREEDING] in Chinese
No. 3, May 78 pp 5-6

ABSTRACT: The author inquires into the causes of the superiority of Yunnan hybrid rice on the basis of Mao's pronouncement that "External causes are the conditions of change, internal causes are the bases of change and external causes exert their effects through internal causes." Among the internal causes, the author cites the following: (1) differences in the genetic materials of the parent strains, which differences are contradictions; (2) the fact that the greater the differences between the parent strains the greater the contradictions will be; (3) the fact that one of two contradictory factors must predominate; and (4) the fact that inversion of predominant and subordinate factors is determined by their respective strengths. The external causes discussed related primarily to environmental and ecological factors, including climate and farming methods, in the Yunnan region.

AUTHOR: None

ORG: Crop Institute, Peking City Agricultural Sciences Academy

TITLE: "A New Artificial Crop - Allogamous Octoploid Rye-Wheat"

SOURCE: Peking I-CH'UAN YU YU-CHUNG [GENETICS AND BREEDING] in Chinese
No 3, May 78 pp 9-10

ABSTRACT: Article discusses a hybrid of rye and wheat for which there have been successful trial tests in regions of arctic and alpine climates in southwestern and northwestern China. The first strain was produced in 1970. In the autumn of 1975, it was tested in a total of 12,000 mou, with yields of over 200 catties per mou in spite of adverse weather conditions. It is now being used over increasingly wider areas in the southwest and northwest, with 130,000 mou being cultivated in 1976 and 400,000 mou being cultivated in 1977. The goal for the autumn of 1980 is over 10 million mou. The method whereby the rye-wheat hybrid is produced is discussed in detail.

AUTHORS: YAO Yu-kuang [1202 1937 0342]
KU Chen-hui [7357 2182 5610]
TU Jo-fu [2629 5387 3940]

ORG: Hainan Experimental Station, Genetics Institute, Chinese Academy of Sciences

TITLE: "Research on Irradiation of Spring Wheat During the Ear-Forming Stage"

SOURCE: Peking I-CH'UAN YU YU-CHUNG [GENETICS AND BREEDING] in Chinese
No. 3, May 78 p 11 and bottom p 12

ABSTRACT: Studies have been made for several years on dosages and periods of irradiation of spring wheat during the ear-forming period for the purpose of raising the mutation rate. Various roentgen dosages were administered during the mononuclear, binuclear and trinuclear stages. A dosage of about 5 roentgens/minute during the mononuclear to binuclear stages was found to be most satisfactory. Damage to zygotes increased as irradiation dosages increased.

AUTHORS: CHANG Pen-min [1728 2609 3046]
HSIEN San-ts'un [0752 0005 1317]

ORG: Food Crops Laboratory, Shansi Province Cotton Institute

TITLE: "A New Variety of Early-Maturing Wheat Developed by a Combination of Hybridization and Irradiation"

SOURCE: Peking I-CH'UAN YU YU-CHUNG [GENETICS AND BREEDING] in Chinese
No 3, May 78 p 13 and bottom p. 36

ABSTRACT: A new variety of wheat, yun-fu-tsao [6663 6553 2483] has been developed for the Shansi region. It was developed by a combination of hybridization and irradiation with CO^{60} - γ rays. The new variety is capable of early maturation during the first ten-day period of May in the Shansi region, has a plant height of 85 cm and furnishes about 800 catties per mou of wheat. The hybridization and irradiation techniques are described in detail. The article includes a photograph of specimens of yun-fu-tsao together with a centimeter scale indicating their height.

AUTHOR: CH'EN Lien-wen [7115 6647 2429]

ORG: Sungari River Region Agriculture Bureau, Heilungkiang Province

TITLE: "Inheritance of Kernel Color in Sorghum"

SOURCE: Peking I-CH'UAN YU YU-CHUNG [GENETICS AND BREEDING] in Chinese
No 3, May 78 p 15

ABSTRACT: The quantity of tannin in sorghum kernels has found to be positively correlated to kernel color. In the course of work on hybridization of sorghum, the author's group also carried on research on inheritance of kernel color in sorghum. As the result of experiments involving hybridization of an infertile strain with red kernels and a strain with white kernels, the conclusion was reached that color was dependent on the R gene, with color deepening as the number of R genes increased and color becoming lighter as the number of R genes decreased. It was concluded that inheritance of kernel color was complex and under polygenic control. It was also concluded that environmental factors played a part.

AUTHOR: LU Wen-liang [7120 2429 2856]

ORG: Botany Institute, Chinese Academy of Sciences

TITLE: "A New Development in Pollen Culture - Single Pollen Grain Culture"

SOURCE: Peking I-CH'UAN YU YU-CHUNG [GENETICS AND BREEDING] in Chinese
No 3, May 78 pp 16-17

ABSTRACT: The author presents an introduction to single pollen grain culture and describes the methods whereby single pollen grains are isolated and cultured. The author reports that a number of Chinese research units have succeeded in applying this technique to tobacco plants. Research on various aspects of single pollen culture is now in progress in China. The author believes that further research in this field will further the development of molecular biology, cytology, morphogenetic studies and genetics.

AUTHORS: JUNG Shan [1369 3790]
CH'EN Shu-yang [7115 3359 7122]

ORG: Northwest Botany Institute

TITLE: "Methods for Overcoming Premature Death and Infertility in Remote Hybrid Descendants"

SOURCE: Peking I-CH'UAN YU YU-CHUNG [GENETICS AND BREEDING] in Chinese
No 3, May 78 pp 18-19

ABSTRACT: The authors list and discuss the following methods for overcoming the phenomena of premature death and infertility in remote hybrid descendants: (1) regulation of growth and development conditions and promotion of formation of fruit bearing organs; (2) prolongation of the growth period or asexual reproduction; (3) free pollination; (4) backcrossing; (5) utilization of the chromosome doubling method to produce allogamous polyploids; and (6) use of tissue culture methods.

AUTHOR: T' IEN Cheng-k'o [3944 2973 4430]

ORG: Chinghai Province Agricultural Science Academy

TITLE: "New Problems Receiving Serious Consideration in Breeding Varieties of Rape"

SOURCE: Peking I-CH'UAN YU YU-CHUNG [GENETICS AND BREEDING] in Chinese
No 3, May 78 p 22 and bottom p 23

ABSTRACT: The author discusses two problems in the breeding of varieties of rape to which serious consideration is now being given. The first of these is the selection and breeding of varieties lacking in or with no myronic acid content. Work on this problem was begun at the Chinghai Province Agricultural Science Academy in 1975 and several hundred strains have been selected and bred. It is hoped that varieties can be selected from this group that will be adaptable to the plateau environment of Chinghai Province and in the oil of which there will be a low myronic acid content. The second problem is that of the selection and breeding of varieties with low sulfur glucoside content. A variety has been obtained Canada which satisfies this requirement and which can be used in hybridization.

AUTHOR: LI Kuei-lien [2621 2710 5571]

ORG: Horticulture Group, Kweichow Province Agricultural Science Academy

TITLE: "A Method for Hybridization of Tomatoes Without Emasculation"

SOURCE: Peking I-CH'UAN YU YU-CHUNG [GENETICS AND BREEDING] in Chinese
No 3, May 78 p 26 and bottom p 27

ABSTRACT: Research on techniques for hybridization of tomatoes without emasculation was begun in the Lichiachuang Production Brigade of the Chung-ts'ao Commune in Kweiyang City in 1977. The experimental materials and methods are described in detail. As the result, specimens which were pollinated without emasculation exhibited higher fruit bearing ratios, higher average individual weights and higher average numbers of seeds per individual than did specimens that had been emasculated.

AUTHOR: SUN Chia-nai [1327 0857 7845]

ORG: Choushan Region Agricultural Bureau, Chekiang Province

TITLE: "Utilizing Sterile Wheat Deficient in Boron"

SOURCE: Peking I-CH'UAN YU YU-CHUNG [GENETICS AND BREEDING] in Chinese
No 3, May 78 p 27

ABSTRACT: It has been found that although deficiency of boron in the soil does not affect the growth of wheat it does have serious effects on the reproductive organs. However, it has also been found that normal fruit development can be obtained by hybridization using pollen from normal strains. The first generation of boron-deficient hybrids exhibited markedly superior qualities. Problems remain in utilizing the boron-deficient hybrids in regions in which the soil is not deficient in boron.

AUTHOR: None

ORG: Group 203, Genetics Institute, Chinese Academy of Sciences; Sinkiang Animal Husbandry and Veterinary Medicine Institute; Group Range 150, Sinkiang

TITLE: "Success Obtained in Low-Temperature Preservation of Fertilized Sheep Ova Outside the Body"

SOURCE: Peking I-CH'UAN YU YU-CHUNG [GENETICS AND BREEDING] in Chinese
No 3, May 78 p 19

ABSTRACT: On the basis of success in transplanting fertilized ova of sheep, experiments were conducted in September 1975 and in September-October 1976 on transplantation of fertilized ova after having been preserved outside the body at low temperatures. In the experiment in 1975, the fertilized ova were kept for one day at 10 °C. In the experiment in 1976, the ova were kept in Lock's solution for 5 days at 10 °C. As the result of the latter experiment, 1 young was born. A photograph of the sheep accompanied the article.

AUTHORS: CHU Lien-fen [2612 6647 5358]
CHAO Han-wen [6392 3352 2429]

ORG: None

TITLE: "Division of Fertilized Sheep Ova Outside the Body"

SOURCE: Peking I-CH'UAN YU YU-CHUNG [GENETICS AND BREEDING] in Chinese
No 3, May 78 p 37

ABSTRACT: The experiment was conducted in December 1977 in the Department of Animal Husbandry and Veterinary Medicine of Pai-ch'eng Agricultural Academy in Kirin Province. Fertilized sheep ova were maintained outside the body at about 10 °C, after which they were transferred to a mixed solution consisting of serum of the donor sheep and NaCl. The ova were then cultured in a constant temperature tank at 37.5 °C. On microscopic examination after 48 hours, it was found that continuous division of the fertilized ova had occurred, with 16 cells having been formed. Subsequent culture in a fresh serum and NaCl solution (1 : 1) at 37.5 °C resulted in further cell division.

AUTHOR: YANG Szu-chih [2799 0934 4249]

ORG: Ch'ien-tu-lou Brigade Scientific Experiment Station, Yen-shih Hsien,
Honan Province

TITLE: "Sowing of Immature Grains of Spring Corn in Summer"

SOURCE: Peking I-CH'UAN YU YU-CHUNG [GENETICS AND BREEDING] in Chinese
No 3, May 78 p 14

ABSTRACT: Although there are 180 days without frost in Yen-shih County throughout the year, in the past there has been only one crop of corn. In order to increase production, a method was introduced making it possible to secure two crops a year. The first sowing is carried out from late March to early April, with blossoming in mid-June. After artificial pollination, immature ears of corn can be obtained in 20 to 25 days. These can be used for sowing after 1 to 2 days of drying. Test results indicated that the second crop would mature before the coming of frost under normal conditions if sowing was accomplished before 25 July.

AUTHORS: LO Ying-jung [5012 2019 2837]
CH'EN Yu-ch'un [7115 1635 2504]
HSIEH Sheng-hao [6200 3932 6275]
CHIANG Wei-neng [5592 4850 5174]

ORG: LO, CH'EN, HSIEH and CHIANG all of Chinghai Province Animal Husbandry and Veterinary Medicine Institute; CHIANG of Central Testing Station, Chinghai Province Bureau of Water Conservancy and Electricity

TITLE: "Live Pig Fat Measuring Instrument"

SOURCE: Peking I-CH'UAN YU YU-CHUNG [GENETICS AND BREEDING] in Chinese
No 3, May 78 p 19

ABSTRACT: Personnel of the organizations indicated above have succeeded in developing the JCB-1 live pig fat measuring instrument. Test results indicated that it was efficient, of high accuracy, simple to operate and of low cost. It is now being produced by the T'ai-yang-sheng [1132 7122 0581] Instruments Plant in Mukden. The instrument operates on the basis of the principle that the electrical conductivity of the skin, fat and muscles differ and is made up of a needle electrode and a semiconductor conductometer. The electrodes are 85-95 mm in length and 1.2 mm in diameter. The structure of the semiconductor conductometer is shown in a figure and the method of operation is

[continuation of I-CH'UAN YU YU-CHUNG No 3, May 78 p 29]

shown in a photograph. Testing thickness is limited to 7 cm. Other detailed specifications of the instrument are given.

10,019

CSO: 4009

ACTA GEOLOGICA SINICA

AUTHOR: TUNG Chen-hsin [5516 2182 0207]

ORG: Laboratory of Shantung Bureau of Geology

TITLE: "The Characteristics of the Rock-Forming and Alteration Minerals of a Yenshanian Intrusive Complex in an Iron-Ore District of Shantung"

SOURCE: Peking TI-CHIH HSUEH-PAO [ACTA GEOLOGICA SINICA] in Chinese Vol 52 No 2, May 78 pp 81-94

TEXT OF ENGLISH ABSTRACT: The Yenshanian magmatic complex consists of a series of poly-staged intrusions. The igneous rocks of each stage have their own characteristics in petrology, mineralogy and petrochemistry, and a certain regularity in the evolution of magma from its early to its late stage has been revealed. The rock bodies related to the iron deposits show strong differentiation, assimilation and late stage metasomatism. The rocks are chiefly intermediate in composition and are characterized by a high content of CaO , $\text{Fe}_2\text{O}_3 + \text{FeO} + \text{MgO}$, alkalies, especially Na_2O , and also a high ratio of $\text{Fe}_2\text{O}_3/\text{FeO}$.

Through study, the author has noticed that different mineral pairs occur in regular intergrowth of different genetic significance as follows: orthopyroxene and

[continuation of TI-CHIH HSUEH-PAO Vol 52 No 2, May 78 pp 81-94]

clinopyroxene; orthopyroxene and hornblende; clinopyroxene and hornblende; plagioclase and orthoclase. The corresponding crystal axes and planes of the pair minerals that constitute the intergrowth are near to, but not parallel to, each other as is usually supposed, and their optical elements possess the feature of directed arrangement.

In the contact metasomatic iron ore deposits of this region, there occurs a strong alkaline metasomatism of the intrusive which reveals a remarkable alteration zonation. The physicochemical properties of minerals of the same group in various zones are different, for instance, there are certain differences in mineral variety and physicochemical properties for such mineral groups as garnet, pyroxene, phlogopite, chlorite, etc.

AUTHOR: WEI Ch'un-hai [7614 2504 3189]*

ORG: None

TITLE: "The Main Characteristics of Geological Structures in the Ch'ilienshan Region, China"

SOURCE: Peking TI-CHIH HSUEH-PAO [ACTA GEOLOGICA SINICA] in Chinese Vol 52 No 2, May 78 pp 95-105

TEXT OF ENGLISH ABSTRACT: In the Ch'ilienshan region there exist various tectonic systems formed as a result of repeated tectonic movements. They are compounded with one another, thus constituting a complicated tectonic framework.

The present paper deals mainly with the Paleo-Hosi [Ho-hsi] system which attained its full growth essentially in the Ch'ilien movement at the end of Silurian. It is made up of a series of parallel fold belts of N55° to 65°W trend and intervening rock masses. It controls the distribution of early Paleozoic sedimentary and magmatic formations and some related mineral resources. It contains some relics of pre-existing E-W trending structural features composed of early Proterozoic group. The fold belts of the western wing of the Ch'ilienshan-Luliangshan structure which probably began to take shape in Devonian and developed to perfection during Cretaceous times transect the Paleo-Hosi [Ho-hsi] system in the western part and are

[continuation of TI-CHIH HSUEH-PAO Vol 52 No 2, May 78 pp 95-105]

superposed on it in the central part. The Lungsi [Lung-hsi] system, a brush structure convexing towards the northeast, joins it from the north at its eastern end. The Hosi [Ho-hsi] system, consisting of a number of equidistant parallel belts of uplifts and subsidences, is transposed upon it. Some of the earlyformed structural features left in the southwestern part of this area were involved in the Sikang-Tibetan system and became modified and distorted.

The Paleo-Hosi [Ho-hsi] system and other tectonic systems mentioned above, together with the NNE-NE trending tectonic systems in eastern China, seem to suggest a southward movement of the Chinese continental crust.

* LI Chin-huan [2621 3866 3562], CHAO Feng-yu [6392 7364 3266], WANG Hsiang-t'ing [3769 4161 1656], SHIH Hung-ch'ing [2514 3163 3237], WANG Kuo-chih [3769 0948 3112], WEN Chia-pao [3306 1367 1405], CH'IAO Hung-yu [0829 7703 3768], CHIN Sung-ch'iao [6855 2646 2890], and CHANG Kuo-wei [1728 0948 4850] all of the Kansu Bureau of Geology, and SHIH Chung-min [4258 6945 3046] and CH'EN Li-jen [7115 4539 0086], both of the Tsinghai Bureau of Geology, also took part in the preparation of this paper.

AUTHOR: Noma

ORG: Research Group of the Hydrogeology of Loess in the Middle Reaches of the Yellow River

TITLE: "On the Hydrogeology of Loess in the Middle Reaches of the Yellow River"

SOURCE: Peking TI-CHIH HSUEH-PAO [ACTA GEOLOGICA SINICA] in Chinese Vol 52 No 2, May 78 pp 106-114

TEXT OF ENGLISH ABSTRACT: Loess is widely distributed in the middle reaches of the Yellow River. The western and central parts of the loess plateau are mainly composed of liang¹, mao² and yuan³, whereas the eastern and southern basin areas are predominantly of loess t'aiyuan⁴, except the river valleys. The loess in this region may be differentiated into the Holocene loess (Q₄); the Upper Pleistocene loess (Q₃); the Middle Pleistocene loess (Q₂); and the Lower Pleistocene loess (Q₁). The Upper Pleistocene loess is widespread and highly permeable. The Middle Pleistocene loess, intercalated with multi-layers of fossil soil, is the main aquifer. The Lower Pleistocene loess is neither so extensive as the former two nor generally water-bearing.

Ground water in loess deposits is recharged predominantly by precipitation. In t'aiyuan areas, however, there are also lateral replenishments from surface and sub-surface run-offs, and supply from confined aquifers below. In yuan areas, ground

[continuation of TI-CHIH HSUEH-PAO Vol 52 No 2, May 78 pp 106-114]

water is mostly retained in cavities and fissures of loess and is called cavity-fissure water. In loess areas both of yuan and t'aiyuan, ground water is fairly abundant and buried at a shallower depth, whereas loess areas of liang and mao are generally deficient in water except palm-shaped and branch-like lands.

According to the quality of ground water in loess, three zones may be marked out: the northern zone, bearing semi-saline water with the degree of mineralization of 3-10 g/l, less saline only in palm-shaped and branch-like lands; the central zone, carrying brackish water with the degree of mineralization of 1-3 g/l; and the southern zone, having fresh water with the degree of mineralization less than 1 g/l.

The development and utilization of ground water in loess are more fruitful in yuan and t'aiyuan areas by means of water-well irrigation which has brought bumper harvests to these areas. In liang and mao areas, on the other hand, water and soil conservation is the main object in solving the problem of drinking water for man and livestock. In the meantime, the investigation of developing other sources of water has been carried on in a large scale so as to relieve the loess region from drought and water shortage.

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- 1 liang--an elongated loess mound.
 - 2 mao--a round loess mound.
 - 3 yuan--a high table-like plain with abruptly descending edges.
 - 4 t'aiyuan--loess covering on terraced landform.
- (Terms above are given by the local people)

AUTHOR: SUNG T'ien-jui [1345 1131 6904]
LIANG Pai-ho [2733 4102 0735]

ORG: SUNG of the Chinese Academy of Geological Sciences; LIANG of Chungshan University

TITLE: "Two Types of Recent Littoral Sediments in South China"

SOURCE: Peking TI-CHIH HSUEH-PAO [ACTA GEOLOGICA SINICA] in Chinese Vol 52 No 2, May 78 pp 115-123

TEXT OF ENGLISH ABSTRACT: In South China there exist two types of littoral sediment which are quite different in their landscapes. One is the type of estuary-littoral sediment with fewer organisms and the other is the type of open sea-littoral sediment with more organisms. Listed are the main differences in various aspects between the two types.

It has been suggested in many textbooks that the littoral sediments may be characterized by the well-roundedness and good sorting of quartz sands. According to the data of sieve analysis and microscopic observation of quartz shapes by the authors, sands of the estuary-littoral type under discussion are well sorted but the grains of quartz sands are irregular, whereas sands of the open sea-littoral type show better roundness but are relatively poorly sorted. These different characteristics of the

[continuation of TI-CHIH HSUEH-PAO Vol 52 No 2, May 78 pp 115-123]

sediments are caused by the abrasion of different source rocks of the quartz sands. The former type of sediment is derived mainly from metamorphic quartzite and the latter from magmatic rocks (granite, etc.).

The analysis of recent littoral sediments in South China provides some new information which is helpful to sedimentary facies analysis or reconstruction of ancient marine sedimentary environments.

AUTHOR: CH' IEN I-yuan [6929 5030 0337]
CH' EN Hsu [7115 2485]

ORG: Nanking Institute of Geology and Paleontology, Chinese Academy of Sciences

TITLE: "The Cambro-Ordovician Stratigraphy of the Omeishan Region, Western Szechwan"

SOURCE: Peking TI-CHIH HSUEH-PAO [ACTA GEOLOGICA SINICA] in Chinese Vol 52 No 2, May 78 pp 124-134

TEXT OF ENGLISH ABSTRACT: The Cambro-Ordovician rocks in the Omeishan region may be divided into the following nine formations or groups based on four detailed sections:
Ordovician:

- Ta-ch'eng-szu Formation
- Kao-tung-k'ou Formation
- Luo-han-p'o Formation

Cambrian:

- Hsi-hsiang-ch'ih Group
- Ta-pi-shan Formation
- T'ai-yang-p'ing Formation
- Yu-hsien-szu Formation

[continuation of TI-CHIH HSUEH-PAO Vol 52 No 2, May 78 pp 124-134]

Cambrian (continued):

Chiu-lao-tung Formation

Mai-ti-p'ing Formation.

The Mai-ti-p'ing, T'ai-yang-p'ing, Ta-pi-shan and Kao-tung-k'ou are newly erected formations. The other five units are revised. The stratigraphic correlation of the region with other parts of southwest China is given in two tabulated forms.

AUTHOR: CHAO Feng-yu [6392 7364 3266]

ORG: The Regional Geological Party of Kansu Bureau of Geology

TITLE: "The Upper Ordovician in the Eastern Part of the Northern Ch'ilienshan and Its Correlation"

SOURCE: Peking TI-CHIH HSUEH-PAO [ACTA GEOLOGICA SINICA] in Chinese Vol 52 No 2, May 78 pp 135-147

TEXT OF ENGLISH ABSTRACT: The Upper Ordovician in the eastern part of northern Ch'ilienshan is composed of deposits of three facies, namely, 1) shelly limestone facies consisting of K'ou-men-tzu Formation (O_{3k}) in the upper part characterized by the Agetolites-Wormsipora assemblage and Ku-lang Formation (O_{3g}) in the lower part marked by the Amsassia chaetoides-Lichenaria assemblage; 2) graptolitic shale facies composed of the Hsieh-hao Formation (O_{3x}) in its upper part with three graptolitic zones (Paraorthograptus angustus, Climacograptus papilio and Climacograptus ensiformis), the Szu-chia-kou Formation (O_{3s}) in the middle with Orthograptus quadrimucronatus zone and the Tien-chu Formation (O_{3t}) with Amplexograptus gansuensis zone in the lower part; and 3) mixed facies with its upper part equivalent to the Hsieh-hao Formation and the lower part to the Ku-lang Formation.

Both the Tien-chu Formation and the Ku-lang Formation overlies the Middle Ordovician

[continuation of TI-CHIH HSUEH-PAO Vol 52 No 2, May 78 pp 135-147]

Ch'e-lun-kou Group (O₂ch) with an angular unconformity. The K'ou-men-tzu and Hsieh-hao formations may be correlated to the Wu-feng Stage in the Yangtze region, while the Ku-leng Formation corresponds roughly to the Szu-chia-kou Formation of Lin-hsiang Stage, and the Tien-chu Formation of Pao-t'a Stage.

As for the boundary between the Ordovician and the Silurian, the upper and lower Dalmanitina beds of the Shih-ch'eng-tzu Formation are assigned to the Lower Silurian and the Upper Ordovician respectively.

AUTHOR: TENG Wan-ming [6772 8001 2494]

ORG: Institute of Geology, Chinese Academy of Sciences

TITLE: "A Preliminary Study on the Petrology and Petrochemistry of the Quaternary Volcanic Rocks of Northern Tibet Autonomous Region"

SOURCE: Peking TI-CHIH HSUEH-PAO [ACTA GEOLOGICA SINICA] in Chinese Vol 52 No 2, May 78 pp 148-162

TEXT OF ENGLISH ABSTRACT: The northern Tibet and the adjoining Kunlun Mountains region are those of the geologically less-studied areas on the earth. Since the Cenozoic (especially Quaternary) time there have occurred rather strong volcanic activities in the northern Ch'iang-t'ang plateau, and in consequence an east-west zone of volcanism was formed between the northern margin of the northern Tibet block and the Kunlun Mountains. Because of the high elevation, inclement climate and difficult terrain of the area, no systematic geologic survey has been done there, although some records on volcanics have been contributed by individual investigators in the past.

This paper describes three areas of volcanics between 34°30' and 36°30'N, and at about 87°E, which are Pa-mao-ch'iung-tsung, Yung-po-hu and Ch'iang-pa-ch'ien. They are all characterized by lava covers and lava flows and belong to the Hawaii-type

[continuation of TI-CHIH HSUEH-PAO Vol 52 No 2, May 78 pp 148-162]

in respect to eruption form. The volcanics are believed to be of Quaternary age since the top horizon of the underlying rocks is assigned to Pliocene-Pleistocene. Geomorphologically, these volcanic covers are usually dissected into table mountains, flat-topped and conical isolated hills. The microscopic investigation shows that the majority of the rocks are of vitrophyric structure. The mineral and chemical compositions indicate a marked regional difference: The Pa-mao-ch'iung-tsung volcanic rocks situated inside northern Tibet block commonly contain aegyrte-augite, titanaugite, leucite, noselite, analcite and alkali-feldspar. The rock type assemblage appears to be rather complicated, being represented by such peralkaline rocks as noselite phonolite, pseudoleucite porphyry and analcitite. The Yung-po-hu and Ch'iang-pa-ch'ien volcanics located on the northern margin of the block seem to be more monotonous, being the normal series of augite dacite, trachyandesite and augite andesite. Chemically this type of volcanic rock greatly differs from the former as well. The respective characteristic features of the alkaline and calc-alkaline rock series of this region are discussed and correlated with the simultaneous volcanics distributed in eastern Asia.

The difference between the volcanic series inside northern Tibet block and that of northern margin is not considered an accidental phenomenon. The author attempts to explain the origin of said volcanics and the regularities of their distribution from the viewpoint of plate tectonics and attributes the formation of the volcanics to the compression and collision of the blocks of Talimu and northern Tibet, and the

[continuation of TI-CHIH HSUEH-PAO Vol 52 No 2, May 78 pp 148-162]

subsequent southward downthrusting of the former. This geological process has been going on since the Himalayan movements. This pattern may be an important supplement to the prevailing explanations for the formation of Tsinghai-Tibet plateau as a result of the collision and subduction of the Indian plate under the Eurasian plate.

AUTHOR: JEN Ying-hsin [0117 6601 2450]
HU Ch'in-te [5170 2953 1795]
HSU Chin-kao [1776 6651 7559]*

ORG: None

TITLE: "A Preliminary Study on the New Mineral of Platinum Group--Omeiite OsAs_2 "

SOURCE: Peking TI-CHIH HSUEH-PAO [ACTA GEOLOGICA SINICA] in Chinese Vol 52 No 2,
May 78 pp 163-167

TEXT OF ENGLISH ABSTRACT: Omeiite was found in a copper nickel sulfide deposit of Szechwan province. With a chemical composition of osmium diarsenide, its formula is OsAs_2 . The mineral is orthorhombic with $a = 5.409 \text{ \AA}$, $b = 6.167 \text{ \AA}$ and $c = 3.021 \text{ \AA}$. Space lattice is Pnmm or Pnn2. This discovered mineral is named after the famous Omeishan. Type mineral is stored in the Geological Museum of the State Bureau of Geology.

* Comrades TS'AI Shao-chou [5591 4801 0719], YEH Te-lung [5509 1795 7127], TIAO Shu-ch'in [0431 3219 3830], CHAO Te-sheng [6392 1795 0581], MEI Pei-wan [2743 0012 2429], FAN Chang-chieh [5400 4545 2638], LI Chao-chih [2621 0340 3112] and ZOU K'ai-hsun [6760 7030 0534] also helped.

8650

CSO: 4009

RADIO

AUTHOR: JEN Jen [0117 0086]

ORG: None

TITLE: "More on the Use of Reed Tubes"

SOURCE: Peking WU-HSIEN-TIEN [RADIO] in Chinese No 4, Apr 78 pp 4-6

ABSTRACT: The author explains the use of reed tubes mainly in the following two forms of driving: (1) By permanent magnet and (2) By electric coil. The former is for devices of automatic checking and control; they always work as various types of switches. The latter is for making relays mostly used in semi-electronic telephone exchanges, process controlling telephone exchanges and various automatic controlling devices. He uses diagrams to explain the different models of these two forms of driving. For (1) there are four basic types of switches of (a) reciprocal movement, (b) rotary movement, (c) magnet biasing and (4) magnet shading. For (2) there are two models of relays with the reed tube placed either inside or outside the electric coil. The author discusses certain aspects of using reed switches with permanent magnets on magnetic field interference, effect of shading and sensitivity. He gives a lengthy discussion on the use of reed type relays with regard to coil ampere-turns values, the synchronization of several relays in one coil, coil heating, the position of the reed tube in a coil and the protection of contact points of the reed.

AUTHOR: (1) CHAO Heng-yuan [6392 1854 0337], MA Yu-ch'en [7456 3768 3819]
(2) HSIANG Szu-hsun [7309 2448 1782]

ORG: (1) None
(2) None

TITLE: (1) "A Soldering-Iron Type Tool for Changing Integrated Components"
(2) "An Anti-Interference Device"

SOURCE: Peking WU-HSIEN-TIEN [RADIO] in Chinese No 4, Apr 78 p 6

ABSTRACT: (1) This article describes a special tool for taking out components from an integrated circuit without cutting their connecting wires. A picture shows its operation, and a diagram shows its specifications. A soldering-iron heats up the tool to melt down the connections of the component to be taken out without damaging the printed circuit.

(2) The author explains an anti-interference device to be used with the photo-electric digital controlling unit of log belt-saws driven by d.c. motors. It employs a NOT-gate and an AND-gate as shown in the illustration. It uses the counter-phase of the interfering pulse to eliminate the interference of the pulse. This device prevents strong current at the start of a d.c. motor from interfering with the digital counter. It is customarily called the "inhibition gate."

AUTHOR: CHIANG Yu-hai /5592 0645 3189/

ORG: None

TITLE: "A Few Points for Attention on the Application of TTL Integrated Circuits"

SOURCE: Peking WU-HSIEN-TIEN /RADIO/ in Chinese No 4, Apr 78 p 7

ABSTRACT: The author calls the attention of comrades in various lines of trade to the rational application of integrated circuit parts. He gives 8 points for those who are engaged in technical innovation by using integrated circuits, (1) to select and use parts rationally according to manufacturers' catalogues, (2) to pay attention to the correct positions of terminals, (3) to be careful in soldering leading wires, (4) to take care of all unused input terminals, (5) to keep high and low voltage circuits as far apart as possible, (6) to shield the power source from all integrated circuits against interference, (7) to add a RS trigger between switch and relay contact points and input terminals of integrated circuits so that the vibration of contact points may not affect the logical function of the circuits and (8) to select and use highly integrated parts when conditions permit.

AUTHOR: (1) CH'I Yung-ho /7871 3057 0735/

(2) None

(3) None

(4) None

ORG: (1) Taiyuan Municipal Electronics Bureau, Shansi Province

(2) Research & Production Office, South China Engineering Institute, Kwangtung Province

(3) Taitsang Electronic Instrument Factory, Kiangsu Province

(4) Television Group of Nantung Middle School, Kiangsu Province

TITLE: (1) "The Successful Trial Making of An Artificial Fur Knitting Machine"

(2) "The SGP-1 Double-Sided Sighting Sonar"

(3) "The DA-30 Soft X-Ray Machine"

(4) "The NT4-1 Model Educational Television Equipment"

SOURCE: Peking WU-HSIEN-TIEN /RADIO/ in Chinese No 4, Apr 78 p 8

ABSTRACT: There are four news briefs on electronics: (1) This machine makes multi-colored pin-point tufting artificial fur. An electronic computer controls the operation of the knitting needles for the choice of color and design. (2) This device is used on a ship or a trawler for deep sea survey or detection by means of supersonic waves. (3) This soft X-ray machine uses molybdenum, instead of wolfram, as the target of electron bombardment to produce soft X-rays for photographing soft parts in medical examination. It may be also used in the examination of fish, plants and light metals. (4) This closed circuit black-white educational TV equipment is used for students in several classrooms to receive the same lecture from a central classroom.

AUTHOR: None

ORG: The technical group of the television workshop of Nanking Woodwork Plant

TITLE: "The Nanking 704-A Model Black-White Television Receiver"

SOURCE: Peking WU-HSIEN-TIEN [RADIO] in Chinese No 4, Apr 78 pp 9-12

ABSTRACT: This Model 704-A b/w TV receiver of Nanking Brand is one of the standard products of the Nanking Woodwork Plant. It is a 31 cm receiver built mainly with electronic tubes. The pictures on the back cover show the top and bottom of layout with arrow-heads toward the channels (top and bottom views), the sweeping part and the high-frequency head. The inside of back cover shows its complete circuit diagram. The article explains a few of its special features, including a transistorized high-frequency head of 12 channels of the TXQ type, a 3-stage beat tuning IF amplifier, a 1-stage VF amplifier, an improved AF amplifier and a plate-grid coupled multivibrator as its field sweeping oscillator. A detailed description is given on the sweeping circuits. Two drawings show the wire connections of the parts under the boards. (To be continued)

AUTHOR: YEH Hsin [5509 2500]

ORG: This journal

TITLE: "A Few Questions on the TV Antenna Booster"

SOURCE: Peking WU-HSIEN-TIEN [RADIO] in Chinese No 4, Apr 78 pp 13-14

ABSTRACT: After an article on "The Transistorized TV Antenna Booster" was published in RADIO No 7 last year, the journal has received many letters asking questions on its making and use. This article contains answers to these questions in general. (1) Two diagrams are given, one shows the 1:1 ratio picture of the printed board, the other shows the construction of the shielded metal box containing the whole booster. (2) The author explains the circuit and parts used with graphic illustrations. (3) As the gain of the booster may reach 30 db, and as the output and input signals are on the same frequency, feedback can be easily produced between the output and input terminals in addition to the feedback between various stages. Special precaution should be taken by using 75 ohm high-frequency coaxial cables as feeders for the connection of input and output. Other forms of feeders are also explained to match different types of antenna. A table showing data of the coils and illustrations of construction are given.

AUTHOR: None

ORG: The 2241 design group of Peking Radio Plant

TITLE: "The Peony 2241 Model Transistor Receiver (3)"

SOURCE: Peking WU-HSIEN-TIEN RADIO in Chinese No 4, Apr 78 pp 15-17, 32

ABSTRACT: This article is the continuation of a long article of the same title. It gives the following descriptions: 3. The frequency detector circuit - The function of the frequency detector is to detect AF signals from the FM waves. A circuit diagram of the frequency detector unit is given, followed by detailed explains on functions of its different parts. The unit first amplifies the modulated IF wave, turns them into AM-FM waves, then detects the AF signals from the changes of amplitude. The AFC circuit corrects any frequency drift of the local oscillator. A small ammeter is used for tuning. A filter circuit eliminates IF signals from the AF signals at the output of the frequency detector before going into the AF amplifier. IV. Circuits of Low Frequency Amplification and Power Source: 1. Low frequency input circuit - This unit has two stages of amplification for both radio reception and pick-up reproduction. 2. The circuit of tone compensation - A fading type tone selector is used, consisting of a volume control with high and low continuous tuning and a KZJ type 4-knife 5-position switch. Low and high tone for music and speech is controlled by this unit. (To be continued)

AUTHOR: None

ORG: Shih-chia-chuang District Broadcasting Equipment Repairing and Fitting Plant

TITLE: "Experiences of Checking and Repairing A.C. Receivers (3)"

SOURCE: Peking WU-HSIEN-TIEN RADIO in Chinese No 4, Apr 78 pp 18-19

ABSTRACT: This article is the continuation of a serial under the same title. It contains general instructions on checking and repairing receivers with electronic tubes. It suggests methods of checking a receiver when it suddenly breaks down, and explains possible causes for certain failures such as complete silence, weak and distorted signals, ageing of power amplifier tubes, condenser leakage and a grid-resistor open circuit. It discusses faults of the voltage amplification stage, such as no signal, weak signal and distortion. It also explains similar faults of the detector circuit, and suggests method of making repairs. (To be continued)

AUTHOR: YEH Hsing-fa [5509 5281 4099]

ORG: Wuhan Municipal No. 2 Radio Plant

TITLE: "A Short Introduction and the Maintenance of East-Wind JK-50A Model Transistor Audio-Amplification System (Continued)"

SOURCE: Peking WU-HSIEN-TIEN [RADIO] in Chinese No 4, April 78 pp 20-22

ABSTRACT: The article is the continuation of an article under the same title. It deals with the operation and maintenance of this audio-amplification system for rural wired broadcasting. This system consists of a radio receiving unit and a public address unit, operated on a d.c. power source of 60-72 volts. The article explains methods of checking and repairing faults and making adjustments. The work of checking may be carried out with or without power on. The selection and installation of high-power tubes are explained. It also gives data for reference on short and medium wave antenna coils, short wave oscillator coils and trapping coils, medium wave oscillator coils and the IF transformer, and the power transformer.

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SCIENCE PICTORIAL

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ORG: None

TITLE: "New Advancement in Artificial Synthesis of Nucleic Acids"

SOURCE: Shanghai K'O-HSUEH HUA-PAO [SCIENCE PICTORIAL] in Chinese No 5,
May 78 pp 1-3, inside front cover

ABSTRACT: Artificial synthesis of nucleic acids in China began during the cultural revolution. The first successes were in ribo-octynucleotide and deoxy-ribo-tridecynucleotide. On the basis of this initial accomplishment, a group of scientists gathered in Shanghai to begin a cooperative effort in the artificial synthesis of hexadecylribonucleotide. This task has now been victoriously completed. The artificial synthesis process requires two steps: (1) Chemical synthesis of the short RNA segment; (2) The short RNA segments are linked with enzyme to become a long segment. The base sequence of the hexadecylribonucleotide synthesized by Chinese scientists is AUUCCGGACUCCGUCCA, corresponding with the sequential arrangement of the alanin transfer RNA of yeast. The technique of linkage to form a given sequential arrangement is new in artificial synthesis, and will undoubtedly be useful in the investigation of the relationship and principle between structure and function. It will be important in future attempts of creating and reconstructing life. It is entirely possible for men to synthesize such simple organism as virus in the test tube in the not very distant future. Drawings depicting the procedure of artificial synthesis and photos depicting members of cooperative group engaging in the synthesis experiment are presented on the inside front cover of this issue.

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ORG: None

TITLE: "Atmospheric Circulation and Simulation Experiment"

SOURCE: Shanghai K'O-HSUEH HUA-PAO [SCIENCE PICTORIAL] in Chinese No 5,
May 78 pp 4-5, front cover

ABSTRACT: The front cover of this issue of the journal is a photo depicting a simulation experiment of the circulation mechanics of the atmosphere. The successful experiment of simulation of atmospheric circulation is very significant in modern meteorology. The paper explains atmospheric circulation and reasons for the need of simulation experiments. The method of carrying out experiments to simulate atmospheric circulation is also explained.

AUTHOR: SHIH Hsiao-ch'un [2457 7729 5028]

ORG: None

TITLE: "All Weather Ships--Semi-submerged Ships"

SOURCE: Shanghai K'O-HSUEH HUA-PAO [SCIENCE PICTORIAL] in Chinese No 5,
May 78 pp 8-9

ABSTRACT: Waves produce resistance when a ship navigates on the water surface, and the speed of the ship will be affected. A semi-submerged ship capable of reducing the resistance produced by small waves had been constructed in the 1930's, but the ship did not operate very well at low speed. Following the development of fluid mechanics and other technologies, the properties of semi-submerged ships were better understood in the 1960's and in the 1970's semi-submerged ships began to be used for offshore oil prospecting. A semi-submerged ship is composed of the three parts of a surface body, a submerged body, and a supporting column. This paper explains the basic characteristics of a submerged ship, the three types of single-bodied, double-bodied, and single-body with dual-support columns, and the future application of semi-submerged ships in oceanic surveying, offshore drilling and prospecting, hospital ship, cargo transportation, etc.

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TITLE: "Remote Sensing--A Comprehensive Modern Technology"

SOURCE: Shanghai K'O-HSUEH HUA-PAO [SCIENCE PICTORIAL] in Chinese No 5,
May 78 pp 9-11, inside back cover

ABSTRACT: The inside back cover of this issue of the journal contains fourteen drawings depicting the applications of remote sensing in the general survey of natural resources, making topographical maps, geological surveying, earthquake forecasting, investigating the condition of fishes in the oceans, global weather forecasting, forest fire warnings, estimating wheat yield, astronomical probing and observation, detecting missile bases, uncovering military camouflage, detecting military troop assemblage, and forecasting disease and pest damage of crops. The paper contains chapters explaining the physical basis of infrared remote sensing, the technique of infrared probing, the laser remote sensing technique, and the broad applications of the remote sensing technique.

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TITLE: "Electronic Computers Capable of Recognizing Images"

SOURCE: Shanghai K'O-HSUEH HUA-PAO SCIENCE PICTORIAL in Chinese No 5,
May 78 pp 12-13

ABSTRACT: This paper first explains the process of image recognition by human eyes, including the photo-sensitive cells on the retina. When these cells receive the stimulation of refractive light wave, there will be a chemical reaction to produce an electrical signal, which is transmitted to the cells of ganglions. In this process the image which is composed of more than one hundred million points is contracted to an image composed of one million points. This contraction process is called abstraction of special characteristics. This contracted image is then transferred to the visual region of the cerebral cortex to produce various visual factors, including shape, distance, shade, color, etc. which are called visual sensations. Through simulating this process, electronic computers are designed with an "eye," which is a photoelectric conversion device, to change the optical image of written words, etc. into an electronic image before proceeding with the process of abstracting the geometric characteristics and final recognition. Applications of this image recognition technique of computers are also discussed.

AUTHOR: None

ORG: None

TITLE: "Fifth Generation Electronic Components--Ultra-large Composite Circuits"

SOURCE: Shanghai K'O-HSUEH HUA-PAO SCIENCE PICTORIAL in Chinese No 5,
May 78 pp 14-15, 48

ABSTRACT: In the short history of development of electronic components, we have had the first generation of electronic tubes, the second generation of transistors, the third generation of composite circuits, the fourth generation of large scale composite circuits. At present, we are entering the stage of developing the fifth generation ultra-large composite circuits. Compared with the first generation electronic computers, the current computers, assembled with ultra-large composite circuits, have a volume of 1/300,000 of that of the former. Miniaturization of electronic components has not only made the volume of electronic machines smaller, but also, and more importantly, improved the reliability of the equipment. The process of 'compositization' for the purpose of miniaturization is subject matter of this paper. In order to meet the requirements of modern scientific and technological development, such as and especially the space technology, further reduction of volume and weight will continuously be the goal of the future. Several approaches to this goal are explained.

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ORG: None

TITLE: "An Important Application of Laser"

SOURCE: Shanghai K'O-HSUEH HUA-PAO [SCIENCE PICTORIAL] in Chinese No 5,
May 78 pp 16-17

ABSTRACT: Isotopes are forms of an element with the same number of protons but different number of neutrons in the nucleus. So far, more than sixty elements in nature have been discovered to be mixtures of several isotopes. Natural uranium is mainly a mixture of three isotopes: U235, U238, and U234, and the uranium used in nuclear reactors is mainly U235. In this manner, the paper explains the need to separate isotopes, and the theory and the method of using laser for isotope separation. Compared with the gas diffusion technique, the separation coefficient is greatly increased when laser is used. Besides, the equipment is simpler and the cost of production is greatly reduced as well. At present, the technique of laser separation remains in the experimental stage, however. According to estimates made in foreign countries, the laser technique will perhaps be used in production in 1985, and its large scale adoption perhaps will not be until the year 2000.

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TITLE: "The Mystery of Quark"

SOURCE: Shanghai K'O-HSUEH HUA-PAO [SCIENCE PICTORIAL] in Chinese No 5,
May 78 pp 18-19

ABSTRACT: This paper tells the story of the announcement made by two physicists of the Stanford University in April 1977, concerning their discovery of fractional charge, amounting to one third of electron charge, on niobium nodules in the superconduction state. In some European and American newspapers, this discovery was held as the emergence of a second generation of atomic bombs, and there were also predictions of Nobel prizes for these physicists. This paper attempts to explain why this announcement should arouse that much excitement. The explanation starts with the fact that the charge of all natural subjects, including basic particles, is multiples of electron charge, and a quark is a fictitious thing presumably carrying one third of electron charge. The meaning of quark and several related models in particle physics are discussed.

AUTHOR: None

ORG: None

TITLE: "Brief News of Science and Technology"

SOURCE: Shanghai K'O-HSUEH HUA-PAO [SCIENCE PICTORIAL] in Chinese No 5,
May 78 pp 20-21

ABSTRACT: This paper includes eight short items on the following subjects: (1) New technique of detecting and measuring the error of the total moving body of a cogwheel system; (2) China's first geothermal wet steam power generation station; (3) Ceramic high voltage power source exchanger; (4) Ion exchange reinforced glass; (5) New method of surveying and reporting the condition of red cotton boll worm threat; (5) Self-repeating cut-off device; (6) Metrological television; (6) Cold photo-source high photo-effect flash bulb. Accomplishments made by Chinese scientific organizations or factories in these fields are related.

AUTHOR: None

ORG: None

TITLE: "Brief News of Science and Technology"

SOURCE: Shanghai K'O-HSUEH HUA-PAO [SCIENCE PICTORIAL] in Chinese No 5,
May 78 pp 22-23

ABSTRACT: This paper contains seven short items describing achievements made by Chinese research organizations and factories in the following subjects: (1) Water mist technique of making low alloy steel powder; (2) Infrared heat metal detector; (3) Drinking water purifying and disinfecting agent--Yu-shui-ch'ing [aluminum hydroxychloride and sodium dichloroisocyanourate]; (4) Multi-transistor supersonic profile oscilloscope; (5) A new water-base damp-preventive paint; (6) A new type pneumatic riveting tool--riveting gun; (7) The 135 plastic camera.

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TITLE: "Laser and Glaucoma"

SOURCE: Shanghai K'O-HSUEH HUA-PAO [SCIENCE PICTORIAL] in Chinese No 5,
May 78 pp 27-29

ABSTRACT: This paper explains the disease of closed angle glaucoma and the methods of surgical and drug treatment. In some cases, due to the health or concurrent diseases of the patient, surgery may not be suitable and the drug treatment may not produce a satisfactory result. For these cases, the laser treatment technique provides an ideal approach. The theory of the laser treatment technique and its advantages are discussed.

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TITLE: "Urinary Tract Infections and Their Prevention and Treatment"

SOURCE: Shanghai K'O-HSUEH HUA-PAO [SCIENCE PICTORIAL] in Chinese No 5,
May 78 pp 28-29

ABSTRACT: Infections of the urinary tract include pyelic, ureteral, urinary bladder, and urethral infections. Incidence of infections of the urinary tract is ten times higher in women than in men. Reasons for the higher incidence, including the fact that the female urethra is shorter, are explained. Many drugs used to treat urinary infections and other diseases during pregnancy can pass through the placenta to endanger the fetus. Effects of several drugs taken by the mother during pregnancy on the fetus are discussed. The paper also includes a description of the combined Chinese traditional and Western medical treatment technique for urinary infections and the treatment significance of large quantities of liquid intake.

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TITLE: "OCL Speaker: Adjustment and Repair of the Major Amplifier"

SOURCE: Shanghai K'O-HSUEH HUA-PAO [SCIENCE PICTORIAL] in Chinese No 5,
May 78 pp 36-37

ABSTRACT: The OCL speaker is relatively superior in its sound quality and it is preferred by many for this reason. It has a relatively strict requirement with respect to the stability of the zero point electric potential, however. Aside from guaranteeing the correctness of the circuit design, the satisfactory operation of the instrument is also closely related to the technique of proper adjustment. Using the major amplifier introduced in the paper "Transistor Direct Coupling Style Amplifier" appearing in K'O-HSUEH P'U-CHI (POPULARIZATION OF SCIENCE No 5, 1976) as the example, this paper explains the method of adjusting or repairing this instrument.

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